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First Named Inventor	John Santhoff et al.
Art Unit	2618
Examiner Name	Nguyen T. Vo
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ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	John Santhoff et al.	Group Art Unit:	2618
		Examiner:	Nguyen Thanh Vo
Serial No.:	10/719,903	Confirmation No.:	4045
Filed:	November 21, 2003		
For:	BRIDGED ULTRA – WIDEBAND COMMUNICATION METHOD AND APPARATUS		

Carlsbad, California
June 22, 2006

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
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APPEAL BRIEF

Dear Sir/Madam:

This brief is submitted under 35 U.S.C. §134 and is in accordance with 37 C.F.R. Parts 1, 5, 10, 11, and 41, effective September 13, 2004 and published at 69 Fed. Reg. 155 (August 2004). This brief is further to Appellant's Notice of Appeal and Pre-Appeal Brief Request for Review, both filed April 24, 2006, and is filed within one month of the mailing of the Notice of Panel Decision from Pre-Appeal Brief Review.

Table of Contents

(1) Real Party in Interest

The real party in interest is Pulse-Link, Inc.

(2) Related Appeals/Interferences

No other appeals or interferences exist which relate to the present application or appeal.

(3) Status of Claims

Claims 1-25 are pending and rejected.

(4) Status of Amendments

No amendments are outstanding.

(5) Summary of Claimed Subject Matter

As an initial matter, it is noted that according to the Patent Office, the concise explanations under this section are for Board convenience, and do not supersede what the claims actually state, 69 Fed. Reg. 155 (August 2004), see page 49976. Accordingly, nothing in this Section should be to change (e.g., broaden, narrow) the scope of the claims by the process of claim interpretation, prosecution history estoppel or in any other manner, for purposes of this appeal and/or subsequently to this appeal.

As set forth in independent claim 1, the invention provides a system for communication between different communications technologies. For example, in one embodiment of the present invention, a conventional narrowband receiver receives data. The data is then demodulated by a demodulator. A transmitter that is structured to transmit a plurality of electromagnetic pulses receives the data from the demodulator, and transmits the data, using the electromagnetic pulses.

The communication system of the present invention enables communication between two specific, yet very different, communication technologies. One is conventional narrowband technology that employs a substantially continuous sine wave carrier signal, and the other is ultra-wideband technology that employs a plurality of electromagnetic pulses.

As discussed in Applicant's specification (pages 6-8) and in the Scientific American and Microwave Journal articles attached in **Appendix B**, ultra-wideband (UWB) communication technology is "vastly different" from conventional technology that employs substantially continuous carrier waves. However, once UWB is deployed, it will operate alongside conventional

communication technologies. The present invention provides a system that enables communication between the two very different technologies.

(6) Grounds of Rejection to be Reviewed on Appeal

Whether claims 1-25 are unpatentable under U.S.C. § 103(a) as being obvious in light of U.S. Patent 6,360,075 ("Fischer") in view of U.S. Patent 6,515,622 ("Izadpanah"").

(7) Argument

Applicant submits this Appeal Brief only after a fruitless prosecution culminating with a final argument that **a reference's failure to teach or suggest was therefore a teaching**.

Specifically, in the 30 January 2006 Final Office Action Response to Arguments section, the Examiner states:

> "Applicant's attention is directed to Fischer, column 12 lines 38-42 which suggests that different modulation techniques can be used in his system. **In addition, Fischer. . .does not state that communication technology such as transmitting a plurality of electromagnetic pulses cannot be used in his system.** Therefore, it is clear that Fischer and Izadpanah is combinable [*sic*]." (emphasis in original, bold added)

Applicant's only independent claim (claim 1) does not recite a specific modulation technique, and therefore the Examiners discussion of different modulation techniques is irrelevant. This points to the Examiners continued misunderstanding of the technology, even after two responses from Applicant that clearly explained the technology.

More importantly, the Examiner's improper logic concluding that a reference which fails to teach or suggest therefore teaches, must be rectified. This confused logic flies in the face of M.P.E.P § 2143.01, and case law (cited in the M.P.E.P.) which requires that there must be a suggestion or motivation in the reference to combine. *In re Fritch*, 972 F.2d 1266 (Fed. Cir. 1992).

The primary reference, Fischer, teaches a conventional radio network wherein content is distributed through a number of repeaters. Each repeater communicates with a number of subscribers by receiving signals from the subscribers and transmitting a signal with the combined subscriber data (Abstract). Fischer addresses the problem of providing data-intensive services in limited frequency spectrum (col. 1, lines 45-55). Fischer's solution involves receiving a plurality of signals, de-modulating, combining, re-modulating the combined signal, and transmitting (col. 2, lines 9-25). Fischer employs conventional continuous carrier wave communication technology (FIG. 3, and col. 3, lines 58-66).

Fischer is completely silent as to any teaching or suggestion to use any other type of communication technology, or to provide a system that can employ two different communication technologies.

The secondary reference, Izadpanah, is concerned with a completely different problem, specifically, "ultra-wideband phased array antennas for radio frequency and optical beam forming" (col. 1, lines 6-8). Izadpanah teaches "a method and apparatus for forming ultra wideband phased array antenna beams with no beam squint" (col. 2, lines 25-28). Data is modulated onto an internally-generated sine wave that is then converted into a multiplicity of discrete electromagnetic pulses, which are transmitted (col. 2, lines 26-44). These "ultra-wideband" (UWB) pulses have a

200 picosecond duration resulting in a 5 GHz wide signal (col. 7, lines 35-38). The advantages taught by Izadpanah are explicitly for systems "where the instantaneous fractional bandwidth of the system exceeds 25%" (col. 1, lines 13-14).

However, the factional bandwidth of Fischer's system is 0.4%. Moreover, Izadpanah contains no teaching or suggestion to use any other type of communication technology, nor does Izadpanah teach or suggest a system that can employ two different communication technologies.

Thus, the only motivation to combine is that provided by the Examiner's improper hindsight reconstruction. But the M.P.E.P. and case law requires that the motivation to combine references must be supplied by the references themselves. "[T]he best defense against the subtle but powerful attraction of hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references", In re Dembiczak. 175 F.3D 994, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999). However, in this case the Examiner proposes to combine completely different technologies that operate in a fundamentally different manner. Therefore, the required motivation can only come from improper hindsight reconstruction.

In conclusion, neither reference teaches or suggests the desirability of communication between two different communication technologies. Further evidence of the disparity of the teachings is the Examiner's reaching to find a motivation to combine. In addition to the incorrect logic that **a reference's failure to teach or suggest is therefore a teaching,** the Examiner argues a secondary motivation to combine is found in Izadpanah: "the ultra wideband pulse system has advantages such as lowered probability of intercept of transmission, reduced multipath fading and

radio frequency interference problems, as suggested by Izadpanah at column 1 lines 11-18" (30 January 2006 Response to Arguments section).

However, this motivation is simply a statement of the inherent advantages of ultra-wideband communication technology. Unfortunately, these benefits are lost when the discrete pulses of ultra-wideband are impossibly integrated into Fischer's carrier waveform, as suggested by the Examiner.

Therefore, the secondary motivation to combine provided by the Examiner also fails completely, as the supposed advantages are lost when creating the unachievable combination.

Conclusion

For all of the reasons set forth above, Applicant respectfully submits that the rejection of claims 1-25 should be reversed. A Notice of Allowance is earnestly solicited.

Respectfully submitted,

6.22.06

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APPENDIX A - APPEALED CLAIMS

1. (Original) A communication system comprising:

a receiver structured to receive a substantially continuous sine wave carrier signal, the signal modulated to contain communication data;

a demodulator communicating with the receiver, the demodulator structured to demodulate the communication data from the substantially continuous sine wave carrier signal; and

a transmitter coupled to the demodulator, the transmitter structured to transmit a plurality of electromagnetic pulses, with the pulses configured to include the communication data.

2. (Original) The communication system of claim 1, wherein the substantially continuous sine wave carrier signal is selected from a group consisting of: an amplitude modulated signal, a phase angle modulated signal, a frequency angle modulated signal, an orthogonal frequency division multiplexing modulated signal, a quadrature amplitude modulation signal, a dual sideband modulated signal, a single sideband modulated signal, and a vestigial sideband modulated signal.

3. (Original) The communication system of claim 1, wherein the substantially continuous sine wave carrier signal has a radio frequency bandwidth that may range between about 10 kilohertz to about 5 megahertz.

4. (Original) The communication system of claim 1, wherein the demodulator is selected from a group consisting of: an amplitude demodulation circuit, a quadrature amplitude demodulation circuit, a frequency angle demodulation circuit, a phase angle

demodulation circuit, and an orthogonal frequency division demodulating circuit.

5. (Original) The communication system of claim 4, wherein the amplitude demodulation circuit is selected from a group consisting of: a dual sideband demodulation circuit, a single sideband demodulation circuit, and a vestigial sideband demodulation circuit.

6. (Original) The communication system of claim 2, wherein the dual sideband modulated signal has a suppressed carrier.

7. (Original) The communication system of 4, wherein the amplitude demodulation circuit comprises a low pass filter.

8. (Original) The communication system of claim 2, wherein the single sideband modulated signal has a suppressed carrier.

9. (Original) The communication system of claim 1, further including a first transmission medium coupled to the receiver, wherein the receiver receives the substantially continuous sine wave carrier signal through the first transmission medium.

10. (Original) The communication system of claim 9, wherein the first transmission medium is a wireless medium.

11. (Original) The communication system of claim 9, wherein the first transmission medium is selected from a group consisting of: an optical fiber ribbon, a fiber optic cable, a single mode fiber optic cable, a multi-mode fiber optic cable, a twisted pair wire, an unshielded twisted pair wire, a plenum wire, a PVC wire, a coaxial cable, and an electrically

conductive material.

12. (Original) The communication system of claim 1, further including a second transmission medium coupled to the transmitter, wherein the transmitter transmits the plurality of electromagnetic pulses through the second transmission medium.

13. (Original) The communication system of claim 12, wherein the second transmission medium is a wireless medium.

14. (Original) The communication system of claim 12, wherein the second transmission medium is selected from a group consisting of: an optical fiber ribbon, a fiber optic cable, a single mode fiber optic cable, a multi-mode fiber optic cable, a twisted pair wire, an unshielded twisted pair wire, a plenum wire, a PVC wire, a coaxial cable, and an electrically conductive material.

15. (Original) The communication system of claim 1, wherein each of the plurality of electromagnetic pulses comprises an ultra-wideband pulse.

16. (Original) The communication system of claim 15, wherein each of the plurality of ultra-wideband pulses has a duration that ranges from about 10 picoseconds to about 10 milliseconds.

17. (Original) The communication system of claim 1, wherein the transmitter comprises an ultra-wideband pulse modulator that is structured to transmit a multiplicity of ultra-wideband pulses.

18. (Original) The communication system of claim 17, wherein the ultra-wideband pulse modulator is selected from a group consisting of: a pulse amplitude modulator, a pulse position modulator, a pulse duration modulator, a ternary pulse modulator, an on-off keying pulse modulator, a coded recurrence modulator, a sloped amplitude modulator, and a pulse phase modulator.

19. (Original) The communication system of claim 1, wherein each of the plurality of transmitted electromagnetic pulses occupies substantially the same radio frequency spectrum.

20. (Original) The communication system of claim 1, wherein each of the plurality of electromagnetic pulses is transmitted so that each pulse occupies a discrete portion of the radio frequency spectrum.

21. (Original) The communication system of claim 1, wherein the communication data is selected from a group consisting of: voice data, video data, audio data, and high-definition video data.

22. (Original) The communication system of claim 1, wherein the communication data is segmented into individual components selected from a group consisting of: received data, routing information, destination information, quality-of-service information, bit-error-rate information, priority information and latency information.

23. (Original) The communication system of claim 1, wherein the communication data is received in a first communication format, segmented, and re-assembled in a second communication format.

24. (Original) The communication system of claim 23, wherein the second communication format comprises an ultra-wideband communication format.

25. (Original) The communication system of claim 23, wherein the first communication format includes a format selected from a group consisting of: a substantially continuous sine wave carrier signal format; an amplitude modulated signal format, a phase angle modulated signal format, a frequency angle modulated signal format, an orthogonal frequency division multiplexing modulated signal format, a quadrature amplitude modulation signal format, a dual sideband modulated signal format, a single sideband modulated signal format, and a vestigial sideband modulated signal format.

APPENDIX B - EVIDENCE

Bruno Pattan, *A Brief Exposure to Ultra-Wideband Signaling*, Microwave Journal, (December 2003).

David G. Leeper, *Wireless Data Blaster*, Scientific American, 64, 69 (May 2002).

APPENDIX C - RELATED PROCEEDINGS

None (this sheet made necessary by 69 Fed. Reg. 155 (August 2004), page 49978.)